𝕊𝕍

Notice of Allowability	Application No. 10/517,364	Applicant(s) SRINIVASAN ET AL.	
	Examiner Amy He	Art Unit 2858	

-- The *MAILING DATE* of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *4-15 and 17*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Mr. Albert Fasulo on October 3, 2006 and October 11, 2006.

The purpose of the telephone interview is to correct an informality error and to

amend claim 15 so that it is directed to a method of obtaining corrosion measurement

data.

The application has been amended as follows:

In the Claims:

(1)   Claim 13, line 2, phrase "open circuit voltage," has been added before

"OCV".

(2)   Claim 15 has been amended as follows:

15.   In a system including:

an embeddable system for detecting and measuring corrosion in a

structure susceptible to corrosion, said system including a plurality of embeddable

corrosion rate meters (ECRM) for collecting corrosion measurements data and at least

one computing device for analyzing said corrosion measurements, said system

comprising:

at least one working electrode evenly separated from a counter electrode,

wherein a separation distance between said at least one working electrode and said

counter electrode determines an electrolyte medium resistance, said electrolyte medium

resistance is less than or equal to a polarization resistance;

a signal generator for generating a current source, said current source is

connected to a plurality of resistances for creating a plurality of current amplitudes;

a first selector for applying current through each of said plurality of

resistances to said at least one working electrode and said counter electrode,

wherein said current is applied via a galvanostat; and

an external reader-head with a data link and power link connected to said

computing device for powering said ECRM and transferring corrosion measurements

data via said data link, <u>a method of obtaining the corrosion measurements data,</u>

<u>comprising the steps of:</u> wherein said corrosion measurements data is obtained by

<u>a)</u> disconnecting said galvanostat from said working electrode and said counter

electrode; and

<u>b)</u> measuring a voltage difference between said working electrode and said

counter electrode, <u>wherein step b) comprises:</u>

and wherein said measurement is performed by setting a variable j to 0,

where j is an integer value from 0 to n.;

a) i) incrementing j and setting a current pulse amplitude to I_j, wherein amplitudes for current pulses are in the ±0.1 to ±10 μA range;

b) ii) starting a 1 ms current pulse at pre-set amplitude and measuring said voltage difference between working electrode and said counter electrode, storing said difference as 1 ms closed circuit voltage ($CCV_{@1ms}$) between said working electrode and said counter electrode for the 1 ms current pulse at set amplitude I_j;

c) iii) starting a 500 ms current pulse at pre-set amplitude and measuring said voltage difference between working electrode and said counter electrode, storing said difference 500 ms closed circuit voltage ($CCV_{@500ms}$) between said working electrode and said counter electrode for the 500 ms current pulse at set amplitude I_j, wherein a difference between $CCV_{@1ms}$ and $CCV_{@500ms}$ provides $(V_p)_j$;

d) repeating steps b-c i)-iii) for current amplitude values of I_2 through [I_j] I_n, as well as at $-I_1$, through [$-I_j$] $-I_n$, and estimating the value of $(V_p)_j$ for each I_j value.

REASONS FOR ALLOWANCE

2.   Claims 4-15 and 17 are allowed.

3.   The following is an examiner's statement of reasons for allowance:

Claims 4-14 and 17 are allowable because none of the prior art discloses an embeddable system for detecting and measuring corrosion, the system comprising a selector for applying current through a plurality of resistances to a working electrode and a counter electrode; a programmable electronic chip having a voltage output, wherein the chip is programmed to include a voltage-time signal, the voltage-time signal

including a plurality of sine waves; and a galvanostat for receiving and converting the voltage output into a current-time perturbation signal, and in the combination as claimed.

Claim 15 is allowable because none of the prior art discloses a method of obtaining the corrosion measurements in an embeddable system, comprising the steps of measuring a voltage difference between a working electrode and a counter electrode by setting a variable j to 0, where j is an integer from 0 to n; incrementing j and setting a current pulse amplitude to I_j; starting a 1ms current pulse at pre-set amplitude and measuring a voltage difference between the working electrode and the counter electrode as 1 ms closed circuit voltage (CCV@1ms); starting a 500 ms current pulse at pre-set amplitude and measuring a voltage difference between the working electrode and the counter electrode as 500 ms closed circuit voltage (CCV @500ms), wherein a difference between CCV@1ms and CCV@500ms provides $(Vp)_j$; and estimating the value of $(Vp)_j$ for current amplitude values of I_2 through I_n, as well as $-I_1$ through $-I_n$, and in the combination as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Amy He whose telephone number is (571) 272-2230.

The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AH
October 3, 2006.

ANDREW H. HIRSHFELD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800